

SAFETY DATA SHEET



ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name	:	ZAP Express Undigested Vector Kit, Part Number 239201
Part no. (chemical kit)	:	239201
Part no.	:	ZAP Express 239201-51 Undigested Vector XL1-Blue MRF' E.coli Strain 200301-81 XLOLR E. coli Strain 200304-81 ExAssist Interference-Resistant Helper Phage 200253-81 R408 Interference-Resistant Helper Phage 200252-81

1.2 Relevant identified uses of the substance or mixture and uses advised against

Material uses	:	Analytical reagent.
		ZAP Express Undigested Vector 0.02 ml (20 µg 1 µg/µl)
		XL1-Blue MRF' E.coli Strain 0.5 ml
		XLOLR E. coli Strain 0.5 ml
		ExAssist Interference-Resistant Helper Phage 1 ml (>1 x E10 pfu/ml)
		R408 Interference-Resistant Helper Phage 1 ml

1.3 Details of the supplier of the safety data sheet

Agilent Technologies Manufacturing GmbH & Co. KG
Hewlett-Packard-Str. 8
76337 Waldbronn
Germany
0800 603 1000

e-mail address of person responsible for this SDS : pdl-msds_author@agilent.com

1.4 Emergency telephone number

Emergency telephone number (with hours of operation) : CHEMTREC®: +(44)-870-8200418

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition	:	ZAP Express Mixture Undigested Vector XL1-Blue MRF' E.coli Strain Mixture XLOLR E. coli Strain Mixture ExAssist Interference-Resistant Helper Phage Mixture R408 Interference-Resistant Helper Phage Mixture
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Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Not classified.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 2: Hazards identification

Ingredients of unknown toxicity	: XL1-Blue MRF' E.coli Strain	Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 10 - 30%
	: XLOLR E. coli Strain	Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 10 - 30%

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Signal word	: ZAP Express Undigested Vector	No signal word.
	: XL1-Blue MRF' E.coli Strain	No signal word.
	: XLOLR E. coli Strain	No signal word.
	: ExAssist Interference-Resistant Helper Phage R408	No signal word.
	: Interference-Resistant Helper Phage	No signal word.
Hazard statements	: ZAP Express Undigested Vector	No known significant effects or critical hazards.
	: XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	: XLOLR E. coli Strain	No known significant effects or critical hazards.
	: ExAssist Interference-Resistant Helper Phage R408	No known significant effects or critical hazards.
	: Interference-Resistant Helper Phage	No known significant effects or critical hazards.
<u>Precautionary statements</u>		
Prevention	: ZAP Express Undigested Vector	Not applicable.
	: XL1-Blue MRF' E.coli Strain	Not applicable.
	: XLOLR E. coli Strain	Not applicable.
	: ExAssist Interference-Resistant Helper Phage R408	Not applicable.
	: Interference-Resistant Helper Phage	Not applicable.
Response	: ZAP Express Undigested Vector	Not applicable.
	: XL1-Blue MRF' E.coli Strain	Not applicable.
	: XLOLR E. coli Strain	Not applicable.
	: ExAssist Interference-Resistant Helper Phage R408	Not applicable.
	: Interference-Resistant Helper Phage	Not applicable.
Storage	: ZAP Express Undigested Vector	Not applicable.
	: XL1-Blue MRF' E.coli Strain	Not applicable.
	: XLOLR E. coli Strain	Not applicable.
	: ExAssist Interference-Resistant Helper Phage R408	Not applicable.
	: Interference-Resistant Helper Phage	Not applicable.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 2: Hazards identification

Disposal	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
Hazardous ingredients	: XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain	Not applicable. Not applicable.
Supplemental label elements	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	Not applicable. Safety data sheet available on request. Safety data sheet available on request. Not applicable. Not applicable.
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
<u>Special packaging requirements</u>		
Tactile warning of danger	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
2.3 Other hazards		
Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	This mixture does not contain any substances that are assessed to be a PBT or a vPvB. This mixture does not contain any substances that are assessed to be a PBT or a vPvB. This mixture does not contain any substances that are assessed to be a PBT or a vPvB. This mixture does not contain any substances that are assessed to be a PBT or a vPvB. This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
Other hazards which do not result in classification	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage	None known. None known. None known. None known.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 2: Hazards identification

R408 Interference-Resistant Helper Phage None known.

SECTION 3: Composition/information on ingredients

3.1 Substances : ZAP Express Undigested Vector Mixture
 XL1-Blue MRF' E.coli Strain Mixture
 XLOLR E. coli Strain Mixture
 ExAssist Interference-Resistant Helper Phage Mixture
 R408 Interference-Resistant Helper Phage Mixture

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
XL1-Blue MRF' E.coli Strain Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥10 - ≤25	Not classified.	[2]
Sodium chloride	EC: 231-598-3 CAS: 7647-14-5	≤3	Eye Irrit. 2, H319	[1]
XLOLR E. coli Strain Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥10 - ≤25	Not classified.	[2]
Sodium chloride	EC: 231-598-3 CAS: 7647-14-5	≤3	Eye Irrit. 2, H319	[1]
			See Section 16 for the full text of the H statements declared above.	

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

Type

- [1] Substance classified with a health or environmental hazard
- [2] Substance with a workplace exposure limit
- [3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
- [4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
- [5] Substance of equivalent concern
- [6] Additional disclosure due to company policy

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact : ZAP Express Undigested Vector Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

XL1-Blue MRF' E.coli Strain Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

XLOLR E. coli Strain Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

ExAssist Interference-Resistant Helper Phage Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

R408 Interference-Resistant Helper Phage Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 4: First aid measures

Inhalation	: ZAP Express Undigested Vector	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	XL1-Blue MRF' E.coli Strain	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	XLOLR E. coli Strain	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	ExAssist Interference-Resistant Helper Phage	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	R408 Interference-Resistant Helper Phage	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Skin contact	: ZAP Express Undigested Vector	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	XL1-Blue MRF' E.coli Strain	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	XLOLR E. coli Strain	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	ExAssist Interference-Resistant Helper Phage	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	R408 Interference-Resistant Helper Phage	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
Ingestion	: ZAP Express Undigested Vector	Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
	XL1-Blue MRF' E.coli Strain	Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
	XLOLR E. coli Strain	Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
	ExAssist Interference-Resistant Helper Phage	Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
	R408 Interference-Resistant Helper Phage	Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
Protection of first-aiders	: ZAP Express Undigested Vector	No action shall be taken involving any personal risk or without suitable training.
	XL1-Blue MRF' E.coli Strain	No action shall be taken involving any personal risk or without suitable training.
	XLOLR E. coli Strain	No action shall be taken involving any personal risk or without suitable training.
	ExAssist Interference-	No action shall be taken involving any personal risk or

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 4: First aid measures

Resistant Helper Phage	without suitable training.
R408 Interference-Resistant Helper Phage	No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact	: ZAP Express Undigested Vector	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	XLOLR E. coli Strain	No known significant effects or critical hazards.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards.
Inhalation	: ZAP Express Undigested Vector	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	XLOLR E. coli Strain	No known significant effects or critical hazards.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards.
Skin contact	: ZAP Express Undigested Vector	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	XLOLR E. coli Strain	No known significant effects or critical hazards.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards.
Ingestion	: ZAP Express Undigested Vector	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	XLOLR E. coli Strain	No known significant effects or critical hazards.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	: ZAP Express Undigested Vector	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	XLOLR E. coli Strain	No specific data.
	ExAssist Interference-Resistant Helper Phage	No specific data.
	R408 Interference-Resistant Helper Phage	No specific data.
Inhalation	: ZAP Express Undigested Vector	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	XLOLR E. coli Strain	No specific data.
	ExAssist Interference-Resistant Helper Phage	No specific data.
	R408 Interference-Resistant Helper Phage	No specific data.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 4: First aid measures

	Resistant Helper Phage	
Skin contact	: ZAP Express Undigested Vector	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	XLOLR E. coli Strain	No specific data.
	ExAssist Interference-Resistant Helper Phage	No specific data.
	R408 Interference-Resistant Helper Phage	No specific data.
Ingestion	: ZAP Express Undigested Vector	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	XLOLR E. coli Strain	No specific data.
	ExAssist Interference-Resistant Helper Phage	No specific data.
	R408 Interference-Resistant Helper Phage	No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	: ZAP Express Undigested Vector	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	XL1-Blue MRF' E.coli Strain	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	XLOLR E. coli Strain	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	ExAssist Interference-Resistant Helper Phage	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	R408 Interference-Resistant Helper Phage	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	: ZAP Express Undigested Vector	No specific treatment.
	XL1-Blue MRF' E.coli Strain	No specific treatment.
	XLOLR E. coli Strain	No specific treatment.
	ExAssist Interference-Resistant Helper Phage	No specific treatment.
	R408 Interference-Resistant Helper Phage	No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	: ZAP Express Undigested Vector	Use an extinguishing agent suitable for the surrounding fire.
	XL1-Blue MRF' E.coli Strain	Use an extinguishing agent suitable for the surrounding fire.
	XLOLR E. coli Strain	Use an extinguishing agent suitable for the surrounding fire.
	ExAssist Interference-Resistant Helper Phage	Use an extinguishing agent suitable for the surrounding fire.
	R408 Interference-Resistant Helper Phage	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: ZAP Express Undigested Vector	None known.
	XL1-Blue MRF' E.coli Strain	None known.
	XLOLR E. coli Strain	None known.
	ExAssist Interference-Resistant Helper Phage	None known.
	R408 Interference-Resistant Helper Phage	None known.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 5: Firefighting measures

Resistant Helper Phage

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain	In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst.
	ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous combustion products	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain	No specific data. Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides
	XLOLR E. coli Strain	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides
	ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No specific data. No specific data.

5.3 Advice for firefighters

Special precautions for fire-fighters	: ZAP Express Undigested Vector	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	XL1-Blue MRF' E.coli Strain	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	XLOLR E. coli Strain	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	ExAssist Interference-Resistant Helper Phage	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	R408 Interference-Resistant Helper Phage	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Special protective equipment for fire-fighters	: ZAP Express Undigested Vector	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	XL1-Blue MRF' E.coli Strain	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	XLOLR E. coli Strain	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 5: Firefighting measures

ExAssist Interference-Resistant Helper Phage

face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

R408 Interference-Resistant Helper Phage

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

: ZAP Express Undigested Vector

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.

XL1-Blue MRF' E.coli Strain

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.

XL0LR E. coli Strain

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.

ExAssist Interference-Resistant Helper Phage

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.

R408 Interference-Resistant Helper Phage

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.

For emergency responders

: ZAP Express Undigested Vector

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

XL1-Blue MRF' E.coli Strain

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

XL0LR E. coli Strain

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

ExAssist Interference-Resistant Helper Phage

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

R408 Interference-Resistant Helper Phage

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 6: Accidental release measures

unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions

- : ZAP Express Undigested Vector
Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- XL1-Blue MRF' E.coli Strain
Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- XL0LR E. coli Strain
Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- ExAssist Interference-Resistant Helper Phage
Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- R408 Interference-Resistant Helper Phage
Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and material for containment and cleaning up

Methods for cleaning up

- : ZAP Express Undigested Vector
Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- XL1-Blue MRF' E.coli Strain
Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- XL0LR E. coli Strain
Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- ExAssist Interference-Resistant Helper Phage
Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- R408 Interference-Resistant Helper Phage
Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

6.4 Reference to other sections

- : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures	: ZAP Express Undigested Vector	Put on appropriate personal protective equipment (see Section 8).
	XL1-Blue MRF' E.coli Strain	Put on appropriate personal protective equipment (see Section 8).
	XLOLR E. coli Strain	Put on appropriate personal protective equipment (see Section 8).
	ExAssist Interference-Resistant Helper Phage	Put on appropriate personal protective equipment (see Section 8).
	R408 Interference-Resistant Helper Phage	Put on appropriate personal protective equipment (see Section 8).
Advice on general occupational hygiene	: ZAP Express Undigested Vector	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
	XL1-Blue MRF' E.coli Strain	Potentially biohazardous material. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
	XLOLR E. coli Strain	Potentially biohazardous material. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
	ExAssist Interference-Resistant Helper Phage	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
	R408 Interference-Resistant Helper Phage	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Storage	: ZAP Express Undigested Vector	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
	XL1-Blue MRF' E.coli Strain	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 7: Handling and storage

XLOLR E. coli Strain	prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use. Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
ExAssist Interference-Resistant Helper Phage	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
R408 Interference-Resistant Helper Phage	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

7.3 Specific end use(s)

Recommendations

: ZAP Express Undigested Vector	Industrial applications, Professional applications.
XL1-Blue MRF' E.coli Strain	Industrial applications, Professional applications.
XLOLR E. coli Strain	Industrial applications, Professional applications.
ExAssist Interference-Resistant Helper Phage	Industrial applications, Professional applications.
R408 Interference-Resistant Helper Phage	Industrial applications, Professional applications.

Industrial sector specific solutions

: ZAP Express Undigested Vector	Not available.
XL1-Blue MRF' E.coli Strain	Not available.
XLOLR E. coli Strain	Not available.
ExAssist Interference-Resistant Helper Phage	Not available.
R408 Interference-Resistant Helper Phage	Not available.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
XL1-Blue MRF' E.coli Strain Glycerol	NAOSH (Ireland, 1/2020). OELV-8hr: 10 mg/m ³ 8 hours. Form: mist
XLOLR E. coli Strain Glycerol	NAOSH (Ireland, 1/2020). OELV-8hr: 10 mg/m ³ 8 hours. Form: mist

Recommended monitoring procedures

: If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

Product/ingredient name	Type	Exposure	Value	Population	Effects
XL1-Blue MRF' E.coli Strain Sodium chloride	DNEL	Short term Oral	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Long term Oral	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Short term Dermal	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Long term Dermal	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Short term Dermal	295.52 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Dermal	295.52 mg/kg bw/day	Workers	Systemic
	DNEL	Short term Inhalation	443.28 mg/m ³	General population	Systemic
	DNEL	Long term Inhalation	443.28 mg/m ³	General population	Systemic
	DNEL	Short term Inhalation	2068.62 mg/m ³	Workers	Systemic
	DNEL	Long term Inhalation	2068.62 mg/m ³	Workers	Systemic
XLOLR E. coli Strain Sodium chloride	DNEL	Short term Oral	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Long term Oral	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Short term Dermal	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Long term Dermal	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Short term Dermal	295.52 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Dermal	295.52 mg/kg bw/day	Workers	Systemic

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 8: Exposure controls/personal protection

	DNEL	Short term Inhalation	443.28 mg/ m ³	General population	Systemic
	DNEL	Long term Inhalation	443.28 mg/ m ³	General population	Systemic
	DNEL	Short term Inhalation	2068.62 mg/m ³	Workers	Systemic
	DNEL	Long term Inhalation	2068.62 mg/m ³	Workers	Systemic

PNECs

No PNECs available

8.2 Exposure controls

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Individual protection measures

Hygiene measures : Handle as biohazard material (Biosafety level 1). Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

9.1 Information on basic physical and chemical properties

Appearance

Physical state	: ZAP Express Undigested Vector	Liquid.
	XL1-Blue MRF' E.coli Strain	Liquid.
	XL0LR E. coli Strain	Liquid.
	ExAssist Interference-Resistant Helper Phage	Liquid.
	R408 Interference-	Liquid.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 9: Physical and chemical properties

		Resistant Helper Phage	
Colour	:	ZAP Express Undigested Vector	Not available.
		XL1-Blue MRF' E.coli Strain	Not available.
		XLOLR E. coli Strain	Not available.
		ExAssist Interference-Resistant Helper Phage	Not available.
		R408 Interference-Resistant Helper Phage	Not available.
Odour	:	ZAP Express Undigested Vector	Not available.
		XL1-Blue MRF' E.coli Strain	Not available.
		XLOLR E. coli Strain	Not available.
		ExAssist Interference-Resistant Helper Phage	Not available.
		R408 Interference-Resistant Helper Phage	Not available.
Odour threshold	:	ZAP Express Undigested Vector	Not available.
		XL1-Blue MRF' E.coli Strain	Not available.
		XLOLR E. coli Strain	Not available.
		ExAssist Interference-Resistant Helper Phage	Not available.
		R408 Interference-Resistant Helper Phage	Not available.
Melting point/freezing point	:	ZAP Express Undigested Vector	0°C
		XL1-Blue MRF' E.coli Strain	Not available.
		XLOLR E. coli Strain	Not available.
		ExAssist Interference-Resistant Helper Phage	0°C
		R408 Interference-Resistant Helper Phage	0°C
Initial boiling point and boiling range	:	ZAP Express Undigested Vector	100°C (212°F)
		XL1-Blue MRF' E.coli Strain	Not available.
		XLOLR E. coli Strain	Not available.
		ExAssist Interference-Resistant Helper Phage	100°C (212°F)
		R408 Interference-Resistant Helper Phage	100°C (212°F)
Flammability (solid, gas)	:	ZAP Express Undigested Vector	Not applicable.
		XL1-Blue MRF' E.coli Strain	Not applicable.
		XLOLR E. coli Strain	Not applicable.
		ExAssist Interference-Resistant Helper Phage	Not applicable.
		R408 Interference-Resistant Helper Phage	Not applicable.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 9: Physical and chemical properties

Upper/lower flammability or explosive limits : ZAP Express Undigested Vector Not available.
 XL1-Blue MRF' E.coli Strain Not available.
 XLOLR E. coli Strain Not available.
 ExAssist Interference-Resistant Helper Phage Not available.
 R408 Interference-Resistant Helper Phage Not available.

Flash point :

Ingredient name	Closed cup			Open cup		
	°C	°F	Method	°C	°F	Method
ZAP Express Undigested Vector						
Edetic acid	>100	>212	DIN 51758			
XL1-Blue MRF' E.coli Strain						
Glycerol				177	350.6	
XLOLR E. coli Strain						
Glycerol				177	350.6	

Auto-ignition temperature :

Ingredient name	°C	°F	Method
ZAP Express Undigested Vector			
Edetic acid	>400	>752	VDI 2263
XL1-Blue MRF' E.coli Strain			
Glycerol	370	698	
XLOLR E. coli Strain			
Glycerol	370	698	

Decomposition temperature : ZAP Express Undigested Vector Not available.
 XL1-Blue MRF' E.coli Strain Not available.
 XLOLR E. coli Strain Not available.
 ExAssist Interference-Resistant Helper Phage Not available.
 R408 Interference-Resistant Helper Phage Not available.

pH : ZAP Express Undigested Vector 7.5
 XL1-Blue MRF' E.coli Strain 7
 XLOLR E. coli Strain 7
 ExAssist Interference-Resistant Helper Phage 7.5
 R408 Interference-Resistant Helper Phage 7.5

Viscosity : ZAP Express Undigested Vector Not available.
 XL1-Blue MRF' E.coli Strain Not available.
 XLOLR E. coli Strain Not available.
 ExAssist Interference-Resistant Helper Phage Not available.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 9: Physical and chemical properties

	R408 Interference-Resistant Helper Phage	Not available.
Solubility(ies)	: ZAP Express Undigested Vector	Easily soluble in the following materials: cold water and hot water.
	XL1-Blue MRF' E.coli Strain	Soluble in the following materials: cold water and hot water.
	XLOLR E. coli Strain	Soluble in the following materials: cold water and hot water.
	ExAssist Interference-Resistant Helper Phage	Easily soluble in the following materials: cold water and hot water.
	R408 Interference-Resistant Helper Phage	Easily soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: ZAP Express Undigested Vector	Not applicable.
	XL1-Blue MRF' E.coli Strain	Not applicable.
	XLOLR E. coli Strain	Not applicable.
	ExAssist Interference-Resistant Helper Phage	Not applicable.
	R408 Interference-Resistant Helper Phage	Not applicable.

Vapour pressure :

Ingredient name	Vapour Pressure at 20°C			Vapour pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
ZAP Express Undigested Vector						
water	23.8	3.2		92.258	12.3	
2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	0.000027	0.0000036		0.000007501	0.000001	
XL1-Blue MRF' E.coli Strain						
water	23.8	3.2		92.258	12.3	
Glycerol	0.000075	0.00001		0.0025	0.00033	
XLOLR E. coli Strain						
water	23.8	3.2		92.258	12.3	
Glycerol	0.000075	0.00001		0.0025	0.00033	
ExAssist Interference-Resistant Helper Phage						
water	23.8	3.2		92.258	12.3	
R408 Interference-Resistant Helper Phage						
water	23.8	3.2		92.258	12.3	

Evaporation rate	: ZAP Express Undigested Vector	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	XLOLR E. coli Strain	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	R408 Interference-Resistant Helper Phage	Not available.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 9: Physical and chemical properties

Relative density	: ZAP Express Undigested Vector	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	XLOLR E. coli Strain	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	R408 Interference-Resistant Helper Phage	Not available.
Vapour density	: ZAP Express Undigested Vector	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	XLOLR E. coli Strain	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	R408 Interference-Resistant Helper Phage	Not available.
Oxidising properties	: ZAP Express Undigested Vector	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	XLOLR E. coli Strain	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	R408 Interference-Resistant Helper Phage	Not available.
Particle characteristics		
Median particle size	: ZAP Express Undigested Vector	Not applicable.
	XL1-Blue MRF' E.coli Strain	Not applicable.
	XLOLR E. coli Strain	Not applicable.
	ExAssist Interference-Resistant Helper Phage	Not applicable.
	R408 Interference-Resistant Helper Phage	Not applicable.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity	: ZAP Express Undigested Vector	No specific test data related to reactivity available for this product or its ingredients.
	XL1-Blue MRF' E.coli Strain	No specific test data related to reactivity available for this product or its ingredients.
	XLOLR E. coli Strain	No specific test data related to reactivity available for this product or its ingredients.
	ExAssist Interference-Resistant Helper Phage	No specific test data related to reactivity available for this product or its ingredients.
	R408 Interference-Resistant Helper Phage	No specific test data related to reactivity available for this product or its ingredients.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 10: Stability and reactivity

10.2 Chemical stability	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	The product is stable. The product is stable. The product is stable. The product is stable. The product is stable.
10.3 Possibility of hazardous reactions	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No specific data. No specific data. No specific data. No specific data. No specific data.
10.5 Incompatible materials	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials.
10.6 Hazardous decomposition products	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 11: Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure
XL1-Blue MRF' E.coli Strain Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-
XL0LR E. coli Strain Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
XL1-Blue MRF' E.coli Strain Sodium chloride	3000	N/A	N/A	N/A	N/A
XL0LR E. coli Strain Sodium chloride	3000	N/A	N/A	N/A	N/A

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
XL1-Blue MRF' E.coli Strain Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 mg	-
	Eyes - Moderate irritant	Rabbit	-	10 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
XL0LR E. coli Strain Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 mg	-
	Eyes - Moderate irritant	Rabbit	-	10 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-

Sensitiser

Conclusion/Summary : Not available.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 11: Toxicological information

Information on likely routes of exposure	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	Not available. Routes of entry anticipated: Oral, Dermal, Inhalation. Routes of entry anticipated: Oral, Dermal, Inhalation. Not available. Not available.
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Potential acute health effects

Inhalation	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
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Ingestion	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
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Skin contact	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
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Eye contact	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
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Symptoms related to the physical, chemical and toxicological characteristics

Inhalation	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No specific data. No specific data. No specific data. No specific data. No specific data.
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ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 11: Toxicological information

Ingestion	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No specific data. No specific data. No specific data. No specific data. No specific data.
Skin contact	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No specific data. No specific data. No specific data. No specific data. No specific data.
Eye contact	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No specific data. No specific data. No specific data. No specific data. No specific data.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Carcinogenicity	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 11: Toxicological information

Mutagenicity	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Reproductive toxicity	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
XL1-Blue MRF' E.coli Strain Sodium chloride	Acute EC50 2430000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 519.6 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute EC50 402.6 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute IC50 6.87 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Acute LC50 1000000 µg/l Fresh water	Fish - Morone saxatilis - Larvae	96 hours
	Chronic LC10 781 mg/l Fresh water	Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	3 weeks
	Chronic NOEC 6 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Chronic NOEC 0.314 g/L Fresh water	Daphnia - Daphnia pulex	21 days
	Chronic NOEC 100 mg/l Fresh water	Fish - Gambusia holbrooki - Adult	8 weeks
	XLOLR E. coli Strain Sodium chloride	Acute EC50 2430000 µg/l Fresh water	Algae - Navicula seminulum
Acute EC50 519.6 mg/l Fresh water		Crustaceans - Cypris subglobosa	48 hours
Acute EC50 402.6 mg/l Fresh water		Daphnia - Daphnia magna	48 hours
Acute IC50 6.87 g/L Fresh water		Aquatic plants - Lemna minor	96 hours
Acute LC50 1000000 µg/l Fresh water		Fish - Morone saxatilis - Larvae	96 hours
Chronic LC10 781 mg/l Fresh water		Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	3 weeks
Chronic NOEC 6 g/L Fresh water		Aquatic plants - Lemna minor	96 hours
Chronic NOEC 0.314 g/L Fresh water		Daphnia - Daphnia pulex	21 days
Chronic NOEC 100 mg/l Fresh water		Fish - Gambusia holbrooki - Adult	8 weeks

12.2 Persistence and degradability

Not available.

12.3 Bioaccumulative potential

Not available.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 12: Ecological information

12.4 Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

12.6 Other adverse effects : No known significant effects or critical hazards.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Hazardous waste : Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 2008/98/EC.

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	IMDG	IATA
14.1 UN number	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	-	-	-
14.3 Transport hazard class(es)	-	-	-
14.4 Packing group	-	-	-
14.5 Environmental hazards	No.	No.	No.

Additional information

14.6 Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 14: Transport information

14.7 Transport in bulk according to IMO instruments : Not available.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Label	: ZAP Express Undigested Vector	Not applicable.
	XL1-Blue MRF' E.coli Strain	Not applicable.
	XL0LR E. coli Strain	Not applicable.
	ExAssist Interference-Resistant Helper Phage	Not applicable.
	R408 Interference-Resistant Helper Phage	Not applicable.

Other EU regulations

Ozone depleting substances (1005/2009/EU)

Not listed.

Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

Persistent Organic Pollutants

Not listed.

Seveso Directive

This product is not controlled under the Seveso Directive.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia	: Not determined.
Canada	: Not determined.
China	: All components are listed or exempted.
Europe	: All components are listed or exempted.

ZAP Express Undigested Vector Kit, Part Number 239201

SECTION 15: Regulatory information

Japan	: Japan inventory (CSCL): All components are listed or exempted. Japan inventory (ISHL): All components are listed or exempted.
New Zealand	: All components are listed or exempted.
Philippines	: Not determined.
Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
Thailand	: Not determined.
Turkey	: Not determined.
United States	: All components are active or exempted.
Viet Nam	: Not determined.

15.2 Chemical safety assessment : This product contains substances for which Chemical Safety Assessments might still be required.

SECTION 16: Other information

✔ Indicates information that has changed from previously issued version.

Abbreviations and acronyms	: ATE = Acute Toxicity Estimate CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008] DMEL = Derived Minimal Effect Level DNEL = Derived No Effect Level EUH statement = CLP-specific Hazard statement N/A = Not available PBT = Persistent, Bioaccumulative and Toxic PNEC = Predicted No Effect Concentration RRN = REACH Registration Number vPvB = Very Persistent and Very Bioaccumulative
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Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Not classified.	

Full text of abbreviated H statements

XL1-Blue MRF' E.coli Strain H319	Causes serious eye irritation.
XLOLR E. coli Strain H319	Causes serious eye irritation.

Full text of classifications [CLP/GHS]

XL1-Blue MRF' E.coli Strain Eye Irrit. 2	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2
XLOLR E. coli Strain Eye Irrit. 2	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2

Date of issue/ Date of revision : 01/04/2022

Date of previous issue : No previous validation

Version : 1

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